

**Listing of Claims:**

This listing of claims reflects all claim amendments and replaces all prior versions, and listings, of claims in the application (material to be inserted in amended claims is in **bold and underline**, and material to be deleted is in ~~strikeout~~).

Claims 1-17           (Canceled).

Claim 18           (Withdrawn).

Claims 19-24       (Canceled).

Claims 25-36       (Withdrawn).

Claims 37-44       (Canceled).

45.   (New)       An apparatus for separating a plurality of components in a vapor or liquid mixture, comprising:

    a plurality of distillation columns constructed in a cascade,

    wherein each of the columns comprises a reboiler and a condenser, liquid drawn from each of the columns being introduced into the reboiler, vapor drawn from each of the columns being introduced into the condenser;

    an outlet of the reboiler of the first column is connected to an inlet of the

condenser of the second column via introduction conduits, which introduce vapor drawn from the reboiler of the first column into the condenser of the second column; and

an outlet of the condenser of the second column is connected to an inlet of the reboiler of the first column via return conduits, which return liquid drawn from the condenser of the second column into the reboiler of the first column.

46. (New) An apparatus for separating a plurality of components contained in a vapor or liquid mixture, comprising:

a plurality of distillation columns constructed in a cascade,

wherein each of the columns comprises a reboiler and a condenser, liquid drawn from the column being introduced into the reboiler, vapor drawn from the column being introduced into the condenser;

an outlet of the reboiler of the first column is connected to the top of the second column via introduction conduits, which introduce vapor drawn from the reboiler of the first column into the second column; and

an outlet of the condenser of the second column is connected to the bottom of the first column via return conduits, which return liquid drawn from the condenser of the second column into the first column.

47. (New) An apparatus according to claim 45, wherein at least one of said columns is a packed column or a wetted wall column;

wherein the packed column uses structured packing that is promoting-fluid-dispersion structured packing or non-promoting-fluid-dispersion structured packing, where the promoting-fluid-dispersion structured packing comprises a plurality of wave-shaped thin plates disposed parallel to the column axis and made into the form of a block by layering the plates so that they come into contact with one another, and the non-promoting-fluid-dispersion structured packing comprises a honeycomb structure or a lattice structure;

wherein the honeycomb structure comprises plates parallel to the direction of the axis of the column; and

the lattice structure comprises a plurality of mutually parallel plates and a plurality of plates which are arranged at right angles with respect to said mutually parallel plates, and the mutually parallel plates which are arranged at right angles are positioned along the direction of the column axis.

48. (New) An apparatus according to claim 45, comprising a hydrogenation device that adds hydrogen to the liquid or vapor drawn from one of the columns.

49. (New) An apparatus according to claim 45, comprising an isotope scrambler that enriches an isotope-enriched liquid or vapor drawn from at least one of said columns,

wherein said isotope scrambler is connected to a conduit that returns the isotope-enriched liquid or vapor to at least one of said columns.

50. (New) An apparatus according to claim 46, wherein at least one of said columns is a packed column or a wetted wall column;

wherein the packed column uses structured packing that is promoting-fluid-dispersion structured packing or non-promoting-fluid-dispersion structured packing, where the promoting-fluid-dispersion structured packing comprises a plurality of wave-shaped thin plates disposed parallel to the column axis and made into the form of a block by layering the plates so that they come into contact with one another, and the non-promoting-fluid-dispersion structured packing comprises a honeycomb structure or a lattice structure;

wherein the honeycomb structure comprises plates parallel to the direction of the axis of the column, and

the lattice structure comprises a plurality of mutually parallel plates and a plurality of plates which are arranged at right angles with respect to said mutually parallel plates, and the mutually parallel plates and the plates which are arranged at right angles are positioned along the direction of the column axis.

51. (New) An apparatus according to claim 46, comprising a hydrogenation device that adds hydrogen to the liquid or vapor drawn from one of the columns.

52. (New) An apparatus according to claim 46, comprising an isotope scrambler that enriches an isotope-enriched liquid or vapor drawn from at least one of said columns,

wherein said isotope scrambler is connected to a conduit that returns the isotope-enriched liquid or vapor to at least one of said columns.

**Amendments to the Drawings:**

Please replace sheets 1 and 15 of the drawings with the attached replacement sheets 1 and 15. The replacement sheets incorporate the desired changes in the drawings, and each sheet includes all of the figures that appeared on the immediately prior version of that sheet.

Attachment: Replacement Sheets 1 and 15.